REMARKS/ARGUMENTS

By the present amendment, claims 1, 14, 15, 16 and 17 have been amended as described below. The amendments to the clams have been made without prejudice and without acquiescing to any of the Examiner's objections. Applicant reserves the right to pursue any of the deleted subject matter in a further continuation, continuation-in-part or divisional application. The amendment does not contain new matter and its entry is respectfully requested.

The Official Action dated June 28, 2005 has been carefully considered. It is believed that the amended specification and the following comments represent a complete response to the Examiner's rejections and place the present application in condition for allowance. Reconsideration is respectfully requested.

Claim Objections

The Examiner has objected to claims 2-4, 8, 11, 17-22 and 24-28 because the status identifier of the claims is improper according to 37 CFR 1.121. In response, the status identifier of the claims has been corrected.

35 U.S.C. §112 - second paragraph

The Examiner has objected to claims 14-16 because in claims 14-16, "said total seed protein" lacks antecedent basis. In response, claims 14-16 have been modified to remove "said" before total seed protein.

In view of the foregoing, we respectfully request that the objections to the claims under 35 U.S.C. 112, second paragraph be withdrawn.

35 U.S.C. §112 - first paragraph

The Examiner has objected to claims 1, 3, 5-12, 14-17 and 21-23 under 35 U.S.C. §112, first paragraph because the specification, while being enabling for a method using *Brassica napus* cells, does not reasonable provide enablement for any plant cell.

In response, claims 1 and 17 have been amended to indicate that the plant seed comprises an oil fraction. Support for this amendment can be found in the application for example on page 22, lines 1-4. We respectfully submit that the specification is enabling for all plant seeds which comprise an oil fraction. The Examiner indicates that protein isolation and purification take into account two kinds of factors: (i) separation of the protein of interest from a particular biological source, and (ii) the biochemical properties of the particular protein. We respectfully submit the biological source is limited to a plant seed comprising an oil fraction and the claims do not including other biological sources (i.e. *E.* coli and fungi). In addition, these claims also do not include any other plant sources, for example plant tissues (i.e. leaf, root, flower or stem). Furthermore, the present invention provides a method for the isolation of chymosin from a seed that involves crushing the seed, fractionating the crushed plant seed into an oil fraction, aqueous fraction and a fraction comprising insoluble materials. Therefore, as both the oil and insoluble fractions are removed, the levels of these components in the various seeds are not relevant for this analysis. One of skill in the art could readily practice the method of the invention on any plant comprising an oil fraction. In fact, Applicant has conducted the method of the invention to produce chymosin in safflower and can provide details of the results if the Examiner desires.

With respect to the biochemical properties of the particular protein, the biochemical properties, including functional properties, are consistent as the claims are limited to chymosin. One of skill in the art could readily practice the method to isolate all chymosins. As there is at least 70% sequence identity between chymosin proteins the biochemical properties (i.e. size and isoelectric point) will be consistent for all chymosin proteins. As well, all chymosin proteins have the same function in the clotting of milk. Therefore, the purification of the chymosin from the aqueous fraction based on the disclosure in the specification would not require excessive experimentation.

Claims 1, 3, 5-12, 14-17 and 21-23 are directed to methods for the expression of chymosin in a plant seed comprising an oil fraction. The application teaches a person of ordinary skill in the art how to introduce nucleic acid sequences into plant host cells (see page 15, line 9 to page 16, line 27), how to readily obtain seed specific promoters (see page 13, line 3 to page 14, line 13) and how to obtain chymosin sequences (see page 9, line 29 to page 10, line 15). Therefore, there is guidance in the specification that would enable one of skill in the art to practice the invention without undue experimentation. Specifically, Applicant has enabled a method for the production of chymosin in plant seeds comprising an oil fraction and therefore is entitled to claim a method for the production of chymosin in plant seeds comprising an oil fraction.

In view of the foregoing, we respectfully request that the objection to the claims under 35 USC 112 be withdrawn.

35 U.S.C. §103

The Examiner has objected to claims 1-8, 10, 11 and 13-23 under 35 USC §103(a) as being unpatentable over Willmitzer et al. and further in view of Applicant's admitted prior art. We respectfully disagree with the Examiner for the reasons that follow.

There are many differences between the present invention and Willmitzer. First, Willmitzer does not provide any evidence that chymosin can be prepared in seed comprising an oil fraction, and therefore, Willmitzer does not isolate chymosin from seed comprising an oil fraction. Willmitzer uses a constitutive promoter (35S RNA from the cauliflower mosaic virus – see for example page 13, line 19-20, page 15, lines 27) which results in the expression of chymosin in various plant parts while the present claims are limited to seed specific promoters. Willmitzer detects the presence of chymosin in total protein extracts using Western Blot analysis (see page 12, lines 17 to 32) and detects the presence of chymosin encoded activity in total protein extracts from leaves (see page 13, lines 7-12). Nowhere does Willmitzer disclose recovering or isolating chymosin from a plant tissue, or more specifically a plant seed comprising an oil

fraction. In fact, Willmitzer does not seem concerned about the purification of enzymes from a plant as evidenced by the statement on page 7, line 7 to 11, "... it may be advantageous to introduce the DNA sequence coding for the enzyme into a plant which is used for feed (either the entire plant or parts thereof, e.g. fruit, roots, etc.) so that it may not be required to isolate the enzyme from the plant." Consequently, Willmitzer would provide no motivation for one of skill in the art to isolate chymosin from plant seeds comprising an oil fraction.

The Examiner has indicated that Willmitzer teaches a method for isolating chymosin by crushing (p 12, line 10) plant tissue, fractionating the resulting product (p 12, line 9-15) and contacting this product with a protein binding resin (p 12, lines 20-25). While Willmitzer teaches a method for homogenizing plant tissue containing chymosin in protein extraction buffer and then fractionating the homogenate through cheesecloth along with centrifugation to remove insoluble components, we respectfully submit that Willmitzer does not fractionate the plant tissue into an oil fraction, aqueous fraction and a fraction comprising insoluble material nor is the chymosin isolated from the fraction. As discussed previously in the May 27, 2004 response, the purification of recombination proteins from oil seeds was difficult due to the presence of large quantities of oil which would make the subsequent purification steps problematic. The art-recognized solution to the problem was to extract the oil using conventional hexane extraction procedures. However, the use of hexane or other organics solvents to extract proteins was not desirable due to the denaturant property of such solvents. Therefore, the present invention provides a solution which is not obvious in light of the cited prior art. Furthermore, The Examiner indicates that Willmitzer contacts the fractionated product with a protein binding resin. We respectfully submit that Willmitzer is using denaturing gel electrophoresis and Western blot analysis for the immunological detection of proteins and is not recovering the chymosin from a protein binding resin. Therefore, Willmitzer is not teaching a method of protein isolation using a protein binding resin.

In summary, Willmitzer in no way discloses or suggests a method for producing chymosin in plant seeds as claimed in the present claims. Further, there is nothing in Willmitzer that would lead one of skill in the art to the method of the present invention. Absent any motivation or suggestion, Willmitzer can not be said to render the claims obvious.

The Examiner has indicated that the Declaration of Dennis is unpersuasive. The Examiner indicates that none of the claims are drawn to purification of chymosin to homogeneity. In response, claims 1 and 17 have been amended to reflect the fact that chymosin is purified to homogeneity. Support for this amendment can be found in Example 5 (page 29, line 3 to page 30, line 10) and in Figure 5. We respectfully request that the Declaration of Dennis be re-considered in light of this amendment.

In view of the foregoing, we respectfully request that all of the objections to the claims under 35 U.S.C. §103 be withdrawn.

The Commissioner is hereby authorized to charge any deficiency in fees (including any claim fees) or credit any overpayment to our Deposit Account No. 02-2095.

In view of the foregoing, we submit that the application is in order for allowance and an early indication to that effect would be greatly appreciated.

Respectfully submitted,

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